

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY

FOREST INSECT INVESTIGATIONS

RECOMMENDATIONS FOR CONTROL OF MOUNTAIN PINE BEETLE  
INTERSTATION WITHIN THE KOOTENAI NATIONAL FOREST

by

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Statement of Trees Treated on  
Kootenai in 1928

RECOMMENDATIONS FOR CONTROL OF MOUNTAIN PINE BEETLE  
INFESTATION WITHIN THE KOOTENAI NATIONAL FOREST

INTRODUCTION

From September 24 to October 1 extensive examinations of several drainages within the Kootenai National Forest were made by Mr. El Heinrichs and the writer in order to determine the present status of the forest insect infestations. Due to the extent of the region to be examined and the amount of time available for the work, it was necessary that these examinations be rather superficial in character. Such conditions are regretted, for though it is possible, from such examinations, to secure an idea of the severity of the outbreak and the need for control, it is very difficult to comply with the requirements of determining the actual cost of the operation if control measures are deemed necessary. A statement as to the status of the insect infestation within each of the areas examined follows.

PRESENT STATUS OF INSECT INFESTATION WITHIN AREAS EXAMINED

Pine Creek

A timber survey of the white pine stands of this drainage has just been completed at which time all the 1925 attacked trees

were recorded by the estimators. As soon as this data has been worked up an excellent idea of the infestation within this area will be secured. In view of this fact but little data was secured from the area aside from a general knowledge that a severe infestation of the mountain pine beetle in white pine existed. It is estimated that from 20 to 30 per cent, or more, of the white pine stand has been killed by insects during the past two seasons. In addition to this loss the thousands of old white pine snags standing throughout the area offer ample evidence of a previous outbreak some 12-15 years ago. Within this area the white pine has been so depleted that it is doubted if more than 12 to 16 per cent of the remaining volume is white pine.

The present outbreak could perhaps be accounted for through a rather severe 1925 fire which burned around the western edge of this area, leaving a large number of scorched and weakened white pine trees which were heavily attacked during the 1926 season. Though at this time there is no actual survey data available from this area, it is estimated that there are from 1,000 to 1,200 white pine trees which have been attacked during the 1926 season.

#### South Fork of Yak River

In the upper portion of this drainage there is an occasional white pine tree infested with the mountain pine beetle, and in the lower portion a large number of infested lodgepole pine trees were



recorded. Though the area was not visited, a severe situation is reported to be present on Fowler Creek, which is a tributary of this river.

#### Zimmerman Hill

In this region there is what one would assume to be the start of a serious outbreak of the mountain pine beetle in lodgepole pine. The infested trees occur in small groups fairly well distributed throughout the area, and will no doubt develop into a serious situation within a year or two.

#### Upper West Fork of Yaak and Garver Creek

A splendid view of this area was secured from the Garver Peak lookout. During the past two seasons the outbreak of the mountain pine beetle in the lodgepole pine stands of this region has developed into a very serious situation. The entire Garver Creek drainage and the timbered areas along the north side of the Yaak appear as solid blocks of discolored trees, as a result of the 1927 attack. There can be no doubt but that this epidemic is spreading to the south and that unless checked will result in a serious devastation of pine areas. No estimate was made for the amount or extent of the 1928 attack, as the newly-infested trees occur by the thousands.

#### Pete Creek

The infested area within this drainage has been materially increased during the past season. There are many 1928 attacked

lodgepole pine to be found along the trail near the head of the drainage which now link the Pete Creek outbreak to that of the West Fork. The infestation in white pine covers a larger area than in past seasons, and is a great deal heavier. From sample strips run through the area, which averaged 1.53 trees per acre, it is estimated that there are from 1,200 to 1,500 trees which have been attacked during the 1925 season.

#### Meadow Creek

During the past season the severity of this infestation has materially increased. From sample strip run through the area which averaged 2.3 trees, it is estimated that there are from 2,200 to 2,500 newly-infested trees within the area. During the examination it was found that on the south fork of this drainage a rather extensive blow-down of white pine had occurred some three or four years ago. It is possible that the outbreak within this area may have received its initial start from this material.

#### Ten Mile

On the headwaters of the Ten Mile Creek drainage there has been a rather heavy loss in the white pine stands during the past few years. Though a rather large number of 1927 attacks were observed, but very few 1928 infested trees were noted. No intensive data was secured from this area.

### Pinkham Ridge

Extensive losses in the lodgepole pine stands of this region have occurred in the past. But very little new work and no new attacks were observed.

### Quartz Creek

In the lower portion of the west fork of the Quartz Creek drainage nearly all of the lodgepole pine has been killed during the past 5 or 6 years. There is further evidence in the presence of many old snags of an outbreak in white pine which occurred some 10 to 12 years ago. Though the acreage of white pine is relatively small (638 acres) a very severe outbreak of the mountain pine beetle exists within it at this time. From data secured from sample strip run within the area, which averaged .41 newly-infested trees per acre, it is estimated that there are from 450 to 550 trees which have been attacked in 1928. This estimate has been raised above that amount which the data secured would indicate, as it was believed that the sample strip as run did not represent a fair sample of the area.

### O'Brien Creek

In that portion of this drainage where control work was instituted during the past season, very few 1928 attacked trees could be found. However, in the upper portion of the drainage which was left untreated last season there has been a marked increase

in the infestation. Sample strips through the entire area gave an average of .62 newly-infested trees per acre. From this data it is estimated that there are from 1,500 to 1,800 trees which have been attacked in 1925.

#### RECOMMENDATIONS FOR CONTROL

Each of the areas examined will be discussed separately, followed with a general summing up of the entire situation showing the funds required for control. In this discussion an attempt will be made to present both the entomological and economical phases of each situation as viewed by the writer. The writer's views of the economics of each situation are given in order that the position taken in regard to some of the recommendations can be more fully understood.

#### Pete Creek

In 1925 there existed in the white pine stands of the Pete Creek drainage what appeared to be the start of a severe outbreak of the mountain pine beetle. The origin of this infestation immediately became an issue, for a few miles to the north there existed a serious epidemic of this insect in lodgepole. Though no physical connection was present between these two infestations, there could be no assurance that the beetles had not flown from the lodgepole into the white pine area, and would continue to do so in the future. However,

the possibility of there being no relationship seemed to justify the institution of control work within the Pote Creek area.

Control measures were instituted in the spring of 1926, but during the summer a rather heavy reinfestation occurred within the area. However, control measures were again instituted in 1927, which were again followed by a still heavier reinfestation than that which had occurred the previous season. Based upon the experimental value of the project, and the possibility of the region acting as a stepping stone for the spread of the infestation into adjacent areas, control measures were again instituted in 1928.

During the past season the reinfestation has been a great deal heavier than in any of the previous years, and covers a much larger area. It is recommended that this project be discontinued. The reasons for such a recommendation are as follows:

1. Experimental value of the project will not begin to compensate for the funds expended.
2. Infestation already exists in areas to the south so that the possibility of the area acting as a medium to a southern spread of the insects can be disregarded.
3. The possibility of saving a volume of white pine within the area sufficient to justify the expense of the past and continued operations seems prohibitive. With the heavy black of infestation existing a few miles to the north which is spreading to the south, the destruction of a large per cent of the white pine within the area seems assured.
4. The possibility of marketing this timber in the near future is rather remote.



### Meadow Creek

There is a serious situation within this area which if not checked will no doubt result in the destruction of a large per cent of the total volume. It is possible, of course, that this infestation is the result of the insects spreading from the severe epidemic to the north. However, as this epidemic is some 14 miles distant, it is probable and possible that this condition is a local one.

The merchantability of the timber stands within this drainage, as well as in Pete Creek, should be considered in all thoughts of control. If the area is to be logged within the next few years, it would seem that the expense of control measures would be justified, for the purpose of protecting what timber remains within the area. However, if a longer period of years is to elapse before this timber is marketed, then it would seem that the cost of protecting the timber within the area would be more than the value of the timber at stake. The problem of protecting for a long period of years such evenmature trees as exist on this and other white pine areas of the forest is a very difficult one, and the chances of success very problematical.

From an entomological viewpoint the infestation should be treated, but it is doubted if it would be an economical undertaking. Though the writer's views have been presented, it is felt that the final decision on this matter should rest with the Forest Service.

### O'Brien Creek

About one-third of the infested trees within this drainage were treated during the past season. A complete clean-up of the infestation was not made due to the lack of funds. The outbreak within the untreated area has increased during the past season, so that a serious situation now exists. The timber within this region is merchantable and will no doubt be marketed within a very few years. It is therefore recommended that a complete clean-up of all the infested trees be made during the season of 1929.

### Quartz Creek

As conditions within this area are comparable to those in O'Brien Creek, it is recommended that a thorough clean-up of all infested trees within the area be made during the 1929 season.

### Bobtail Creek

A severe 1927 attack of the mountain pine beetle occurred in the white pine stands of this area. To salvage the infested timber and to check the outbreak the timber was sold and is being logged at this time. Forest officers report that during the past summer all freshly-cut logs were lightly attacked by the mountain pine beetle, so it is hoped that this operation will not only result in the salvage of the remaining timber but will result in the reduction of the general infestation throughout the region.

### Pine Creek

This area presents a rather complicated situation. The percentage of white pine within the area is very low as compared to other tree species. During the past two seasons a large percent of this relatively small volume of white pine has been destroyed by the mountain pine beetle. A certain portion of the area is held under private ownership. The timber is remote, and 9 or 10 miles of road would need to be constructed through a barren 1910 burn in order to reach the area. The lower portion of the drainage is now being logged, and unless the upper portion above the 1910 burn is also taken at this time, many years will elapse before the timber in the infested area is marketed. In such an event it would seem impossible to attempt the protection of this small volume of pine over such a period. Under such conditions the only justifications for control measures would be their institution in an attempt to prevent the spread of the beetles into adjacent areas.

It is therefore recommended that control measures be instituted during the 1929 season, if the timber within this region is to be logged within the next year or two. To recommend control merely as a protection to other and adjacent areas is untenable, as long as there seems to be an infestation in all of the areas adjacent. If the infestations in these other regions could be cleaned up, then it would undoubtedly be a justifiable measure.

#### Ten Mile Creek

Though there is a condition within this area which at least has been above that of a normal infestation, no control measures are recommended. This recommendation is based upon the fact that it will be many years before the timber in this area could be logged, and it is believed that the volume of timber at stake will not justify the cost of protection over that period.

#### Zimmerman Hill and South Fork of Yaak River

The relatively new infestations within these two areas would seem to indicate that they resulted from a spread of insects from the severe epidemic on the West Fork of the Yaak. Though the infestation within these and other adjacent lodgepole pine areas should be treated at this time, there would be little use of attempting such an operation without providing some method of cleaning up the West Fork epidemic in order to prevent an annual reinfestation.

#### Pinkham Ridge

Considerable old work was recorded throughout this region. This epidemic was undoubtedly a part of the severe outbreak which was present on the Swamp Creek drainage of the Blackfeet in 1922. Forest officers engaged in timber survey within this region at that time reported a serious condition within that portion of the Kootenai National Forest.



### REQUESTED ALLOCATIONS

The institution of insect control within the Hootenai National Forest is of a necessity contingent upon the amount of funds available. It is for this reason that recommendations for control have been given in a series of four proposals. These proposals are given in the order of their importance from an entomological as well as economical viewpoint. For example, it would not be a sound policy to treat the infestation within the Hootenai Creek drainage and disregard that in O'Brien Creek. It is believed, though no assurance can be offered, that the infestation within the O'Brien, Quartz, Bobtail and Pipe Creek drainages, is an outbreak independent of the heavy infestation to the north. However, a relationship between these two areas is not an impossibility and, with our present knowledge of the flight habits of these insects, would seem very probable. The writer feels that the possibility of it being an independent infestation is sufficiently strong to more than justify the adoption of Proposal No. 2 if funds are available, and No. 1 if they are not. A season of adequate control would no doubt clarify this issue.

In the adoption of the fourth proposal it would be recommended that, in addition to cleaning up the advance groups to the south, an effort be made to reduce the epidemic on the West Fork of the Yaak which is now acting as a source of supply for these areas. If the injury to uninfested trees could be disregarded, and it is believed

that in this case it would be justified, a method of control could perhaps be adopted which would result in a lower cost of control. Such a method could perhaps be the use of oil in spraying standing trees for burning, slashing of large groups of infected trees into windrows and burning, broadcast burning of infected areas, etc.

#### First Proposal

O'Brien Creek	\$ 6,300.
Quartz Creek	<u>2,200.</u>
Requested Allotment	\$ 8,500.

#### Second Proposal

O'Brien Creek	6,300.
Quartz Creek	2,200.
Pipe Creek	<u>4,800.</u>
Requested Allotment	\$ 13,300.

#### Third Proposal

O'Brien Creek	6,300.
Quartz Creek	2,200.
Pipe Creek	4,800.
Meadow Creek	<u>8,200.</u>
Requested Allotment	\$ 21,500.

#### Fourth Proposal

O'Brien Creek	6,300.
Quartz Creek	2,200.
Pipe Creek	4,800.
Meadow Creek	8,200.
Pete Creek	4,500.
Lodgepole Pine Infestation	<u>74,000.</u>
	\$100,000.

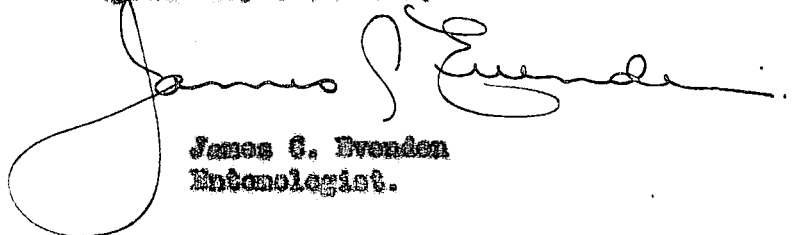
### CONCLUSIONS

It is felt that there is little need to comment further upon these four proposals. The first should be adopted under any circumstances, and the second if at all possible.

In regard to the third proposal it would seem that the need for determining the economics of instituting control measures within the Meadow Creek drainage is a problem for Forest Service decision.

As to the fourth proposal it is impossible for anyone to foretell just what will happen if this infestation is not checked through artificial measures. It is, of course, possible, though in the opinion of the writer not probable, that this epidemic may be reduced through natural means within a few years, or it may continue to increase and spread to the south until we have another condition of such a magnitude that control measures become prohibitive.

Respectfully submitted,



James G. Evenden  
Entomologist.

October 6, 1925.

COPY

KOOTENAI NATIONAL FOREST

Libby, Montana

July 6, 1928.

S  
Insect Control  
Kootenai

District Forester,  
Missoula, Montana.

Dear Sir:

The information asked for in your letter of  
June 27, 1928, follows:

	O'BRIEN CR.:	PETE CR.
Total trees treated -----	415	636
Cost from insect control		
funds-----	\$ 1711.70	2088.30
Cost from contributed		
time or other funds -----	14.00	--
Total cost -----	\$ 1725.70	2088.30
Cost per tree -----	\$ 4.1245	3.28
Estimated number of		
trees left untreated -----	1755	None

Very truly yours,

/s/ Frank J. Jefferson

Forest Supervisor.

*Copy for Mr. Ender*

1725.7  
2088.30  
3814.00

415  
636  
1051



